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FACSIMILE COVER SHEET

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FROM: Amy E. Pulliam *for* Michael R. Davis

Number of pages being transmitted, including this cover sheet: 15

Please direct all questions concerning the transmittal of these pages to Patricia Hill.

RE: Serial No. 09/955,969 (Yoshitsugu HAMA et al.), filed September 20, 2001

MESSAGE:

As requested, enclosed please find a copy of the Amendment After Final Rejection and verified showing (REPORT), filed March 1, 2005 in the above-identified application.

COPY

REPORT

I declare that all statements made herein of my own knowledge are true, and that all statements on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code, and that such willful false statements may jeopardize the validity of the application or any patent issued thereon.

February 14, 2005

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I hereby certify that the following statement is true and accurate.

This is to report the test results of preparing samples of semipermeable membrane support and comparing example 1 (which corresponds to amended claim 1) and comparative examples 1-3 (which correspond to Goettmann et al., USP 5,133,835) and to show that a tensile strength ratio of example 1 is superior than comparative examples 1-3 which contains cellulose fibers (wood pulp). Its result is shown in the attached Reference Figure 1.

Each of semipermeable membrane support is prepared following the attached reference table 1. Materials and its composition employed for preparation of samples are followed by TABLE 1 of Goettmann. Since the exact material brand specified in TABLE 1 were unavailable, equivalent material brand were substituted for preparation. As shown in the reference table 1, comparative examples are prepared in the range of cellulose fibers (wood pulp) 1 to 25 wt.%, particularly comparative example 1 is 5 wt.%, comparative example 2 is 10 wt.%, and comparative example 3 is 25 wt.%. By contrast, example 1 (corresponding to claim 1 of the invention) is 0 wt.% of cellulose fibers. Each of cellulose fibers ratio is adjusted by first polyester fiber ratio.

4. During an operation of membrane separation system, chemical cleaning is conducted to recover membrane performance deteriorated by clogging or fouling, which is phenomena that membrane performance is caused by adhering and blocking of membrane by a buildup of suspended material or dissolved substance to membrane surface, inlet or inside of pore, while the membrane structure itself is not changed. There are many type of membrane separation system, such as dipping former or flat membrane (RO, UF, etc.), and many type of chemical cleaning are available, accordingly. One of typical endurance test is to be immersed in sulfuric acid, thus this test was conducted employing sulfuric acid.
Each of semipermeable membrane support is immersed in 10% sulfuric acid solution at 60°C, then measured tensile strength with the passage of time. Relative tensile strength is based on each semipermeable membrane

support after 3 minutes as 100%. The results are shown in Reference Figure 1.

5. Reference Figure 1 clearly shows that comparative examples decrease their tensile strength with the lapse of time. It is found that the more cellulose fiber ratio, the more drop in tensile strength. In contrast, example 1 of cellulose-free membrane support keeps its tensile strength substantially. This means that cellulose in semipermeable membrane support would deteriorate its tensile strength. Consequently, Goettmann is not suitable for semipermeable membrane support, while the present invention according to amended claim 1 shows superior tensile strength.

Reference Table 1

claim 1 of Goettmann		TABLE I of Goettmann				composition of samples				
weight [%]		Component	Brand	Length Denier	Weight [%]	material	example 1 (claim 1)	comparative example 1	comparative example 2	comparative example 3
first polyester fibers	15–60	Polyester fiber	Type 101 (Hoechst)	1/2inch 1.5d	25	polyester fiber 1.5d × 5mm	35	30	25	10
second polyester fibers	15–50	Polyester fiber	Type 101 (Hoechst)	1 1/2inch 15.0d	25	polyester fiber 6.0d × 5mm	25	25	25	25
third polyester fibers	15–50	Polyester binder fiber	Type 259 (Hoechst)	1/2inch 3.0d	20	polyester binder fiber 1.2d × 5mm	40	20	20	20
polypropylene fibers	10–35	Polypropylene fiber	Pulpex	0.8–1.5mm 20–40 μm	20	polypropylene fiber (synthetic wood pulp)	0	20	20	20
cellulose fibers	1–25	Unrefined wood pulp	SWK		10	Unrefined wood pulp	0	5	10	25

Reference figure 1